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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/528,362

03/18/2005

Teiji Suzuki

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5029

2292 7590 01/06/2009  
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EXAMINER

YANG, JIE

ART UNIT

PAPER NUMBER

1793

NOTIFICATION DATE

DELIVERY MODE

01/06/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/528,362	<b>Applicant(s)</b> SUZUKI ET AL.	
	<b>Examiner</b> JIE YANG	<b>Art Unit</b> 1793	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 October 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 6-11 is/are pending in the application.
- 4a) Of the above claim(s) 7-11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/23/2008 has been entered.

### ***Status of the Claims***

Claims 7-11 are withdrawn as non-elected claims, claims 4-5 are cancelled; claims 1 and 6 have been amended; and claims 1-3 and 6 are pending in application.

### ***Status of the Previous Rejections***

Previous objections of claim 6 under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim is withdrawn in view of the applicants' amendment marked 9/23/2008.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1793

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tahara et al (US 4,975,147, thereafter, US'147) in view of Imai et al (US 6,631,542 B1, thereafter US'542), Kokubu (JP 62-270761, thereafter, JP'761) and Kitano Kenzo et al (JP 2000-087214, thereafter JP'214).

US'147 in view of US'542, JP'761, and JP'214 is applied to the claims 1-3 for the same reason as stated in the previous rejections dated 11/28/2007 and 6/23/2008.

Regarding the newly added limitation: after replacing the atmosphere inside said heating furnace with a second mixed gas, maintaining the furnace at the processing temperature, thereby a portion of nitrogen contained in said nitrided layer is evaporated into the atmosphere and eliminated from said metal ring, and another portion of nitrogen is diffused further inside said metal ring in the instant claim 1, the nitrogen evaporation and diffusion are recognized as properties corresponding to the nitriding process conditions, for example, temperature and atmosphere. As pointed out in the previous offices action marked 11/28/2007 and 6/23/2008, US'147 in view of US'542, JP'761, and JP'214 teaches the similar coated fluoride film and nitriding

Art Unit: 1793

process on the same maraging steel at the similar nitriding conditions as disclosed in the instant invention. More specifically both US'147 and JP'761 teach holding the processing temperature at different nitriding atmospheres (Examples 1-3 of US'147 and Fig.2 of JP'761), which would inherently lead to the nitrogen evaporation and diffusion as recited in the instant claim. MPEP 2112.01.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over '147 in view of US'542, JP'761 and JP'214 as applied to claim 1, and further in view of Dawes et al (US 4,904,316, thereafter US'316).

US'147 in view of US'542, JP'761 and JP'214, and further in view of US'316 is applied to the claim 6 for the same reason as stated in the previous rejections dated 11/28/2007 and 6/23/2008.

### ***Response to Arguments***

Applicant's arguments filed on 9/23/2008 with respect to claims 1-3 and 6 have been fully considered but they are not persuasive.

Applicant's argued that all of the cited references fail to disclose replacing the first mixed gas with a second mixed gas.

In response:

As pointed out in the previous office action marked 6/23/2008, changing nitriding gas, adding oxygen in a mixture of ammonia and nitrogen gas, and designing the ammonia percentage in the nitriding gas are result-effective variables in term of thickness and uniformity of resulting nitriding layers, which are evidenced by JP'761. JP'761 teaches changing nitriding gas atmosphere during a nitriding process, for example, using a different nitriding gas atmosphere in nitriding periods 3 to 7 (Fig.2 of JP'761). The Examiner notices that JP'761 teaches the nitriding atmosphere change during nitriding process (The C and D lines in the nitriding process 6 of Fig. 2 in JP'761). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the gas atmosphere in the process of US'147 in view of US'542, JP'214 and JP'761 in order to obtain desired surface hardness and hardness distribution of nitriding layers (Abstract of JP'761).

The newly amended feature is addressed as above.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jie Yang whose telephone number is 571-2701884.

The examiner can normally be reached on IFP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-2721244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1793

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JY

/Roy King/  
Supervisory Patent Examiner, Art Unit 1793